

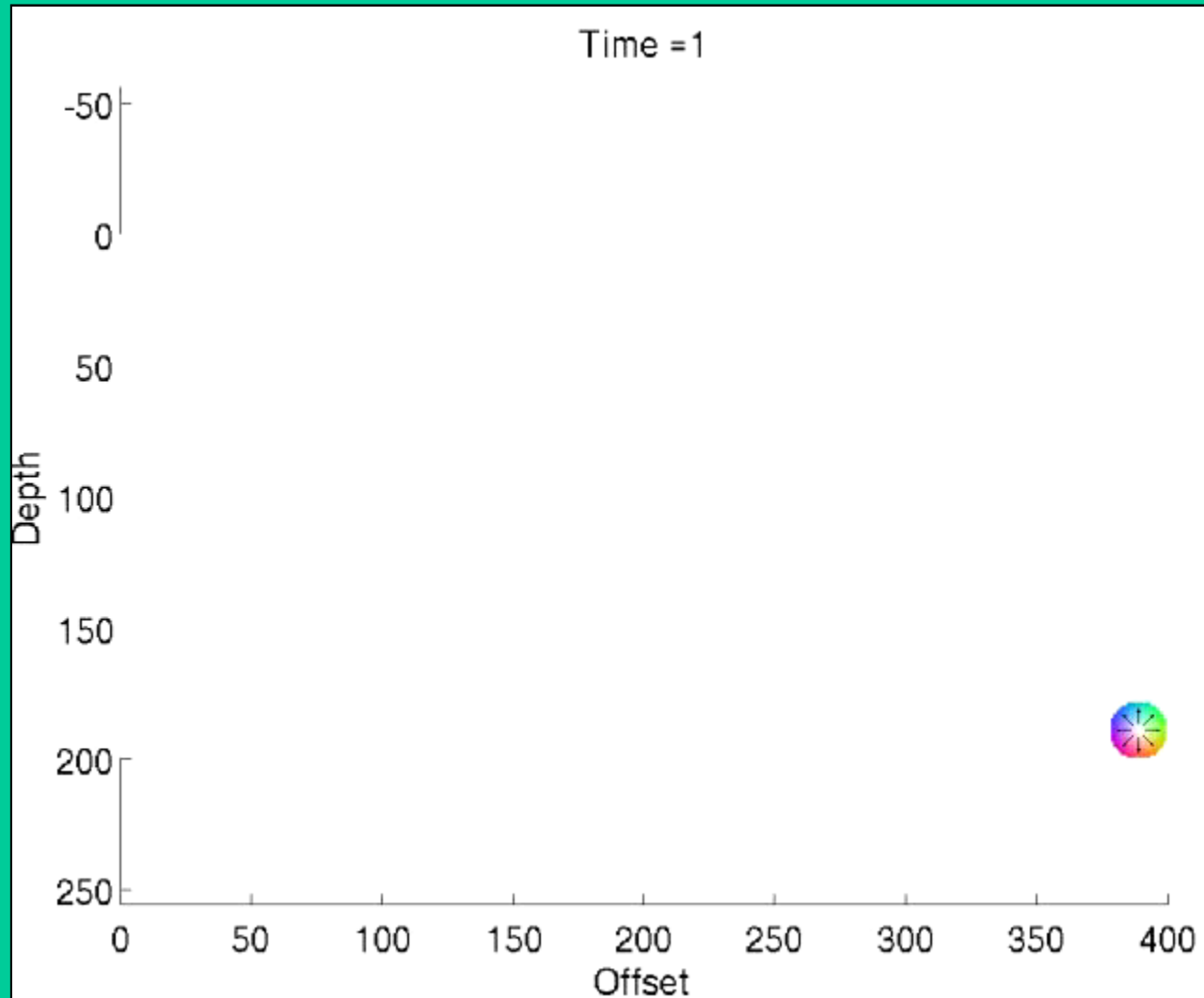
Rayleigh wave numerical modelling

Peter Manning and Gary Margrave

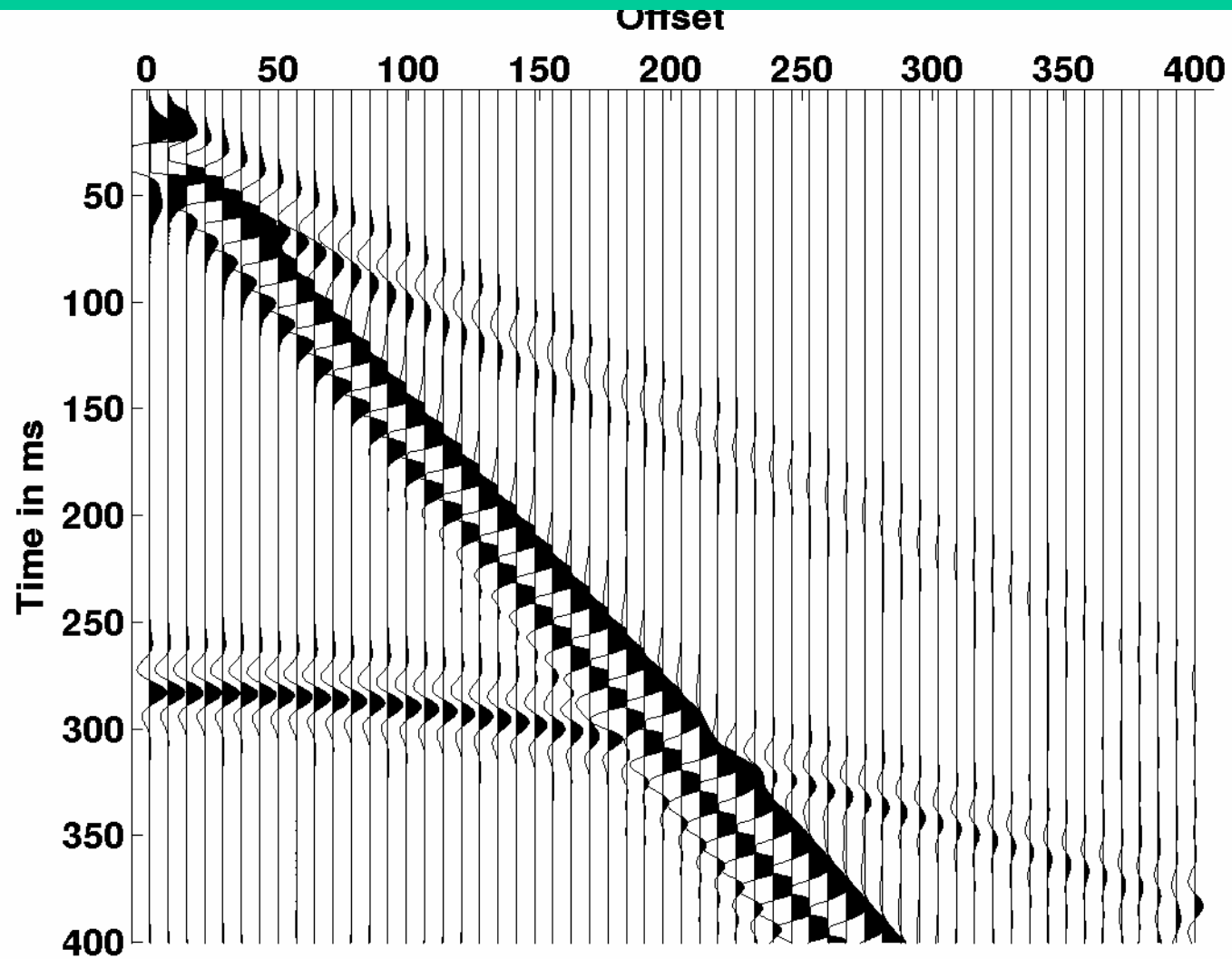
- Rayleigh waves on shot records
- A detailed look at a Rayleigh wave
- Simple Rayleigh wave reflections/transmissions
- Effects of thin layers
- Conclusions
- Acknowledgements



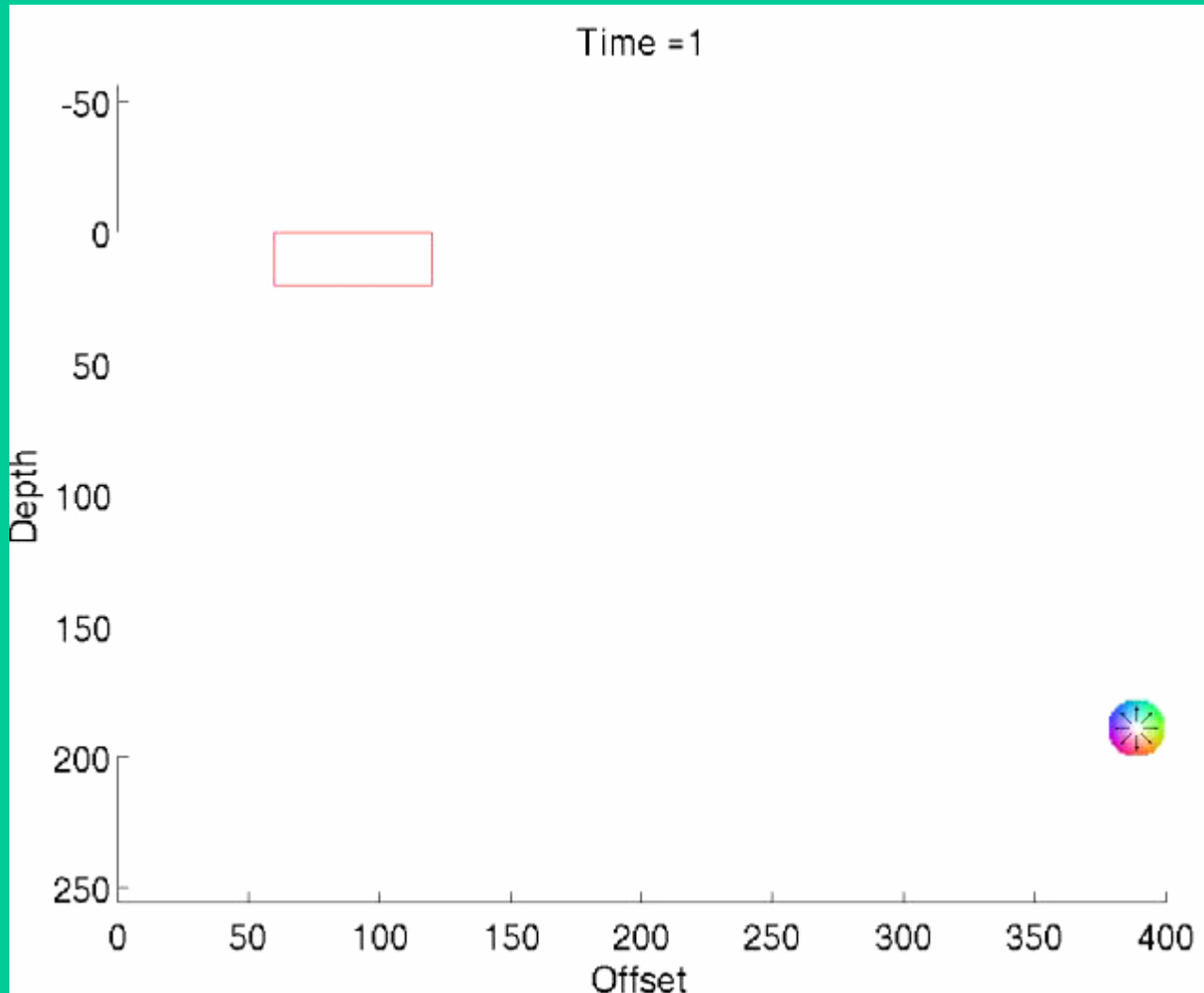
Events from an explosive source



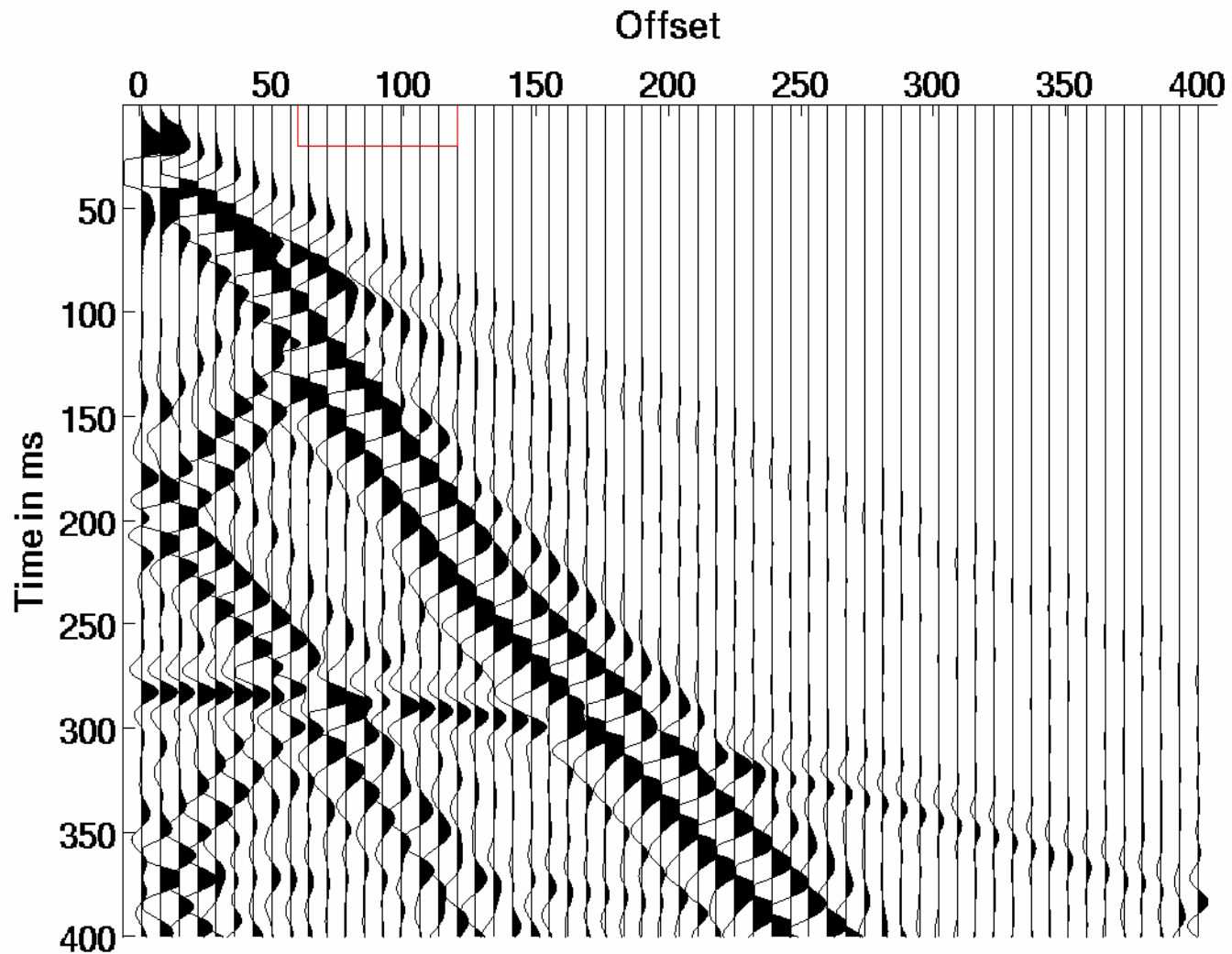
Seismic from an explosive source



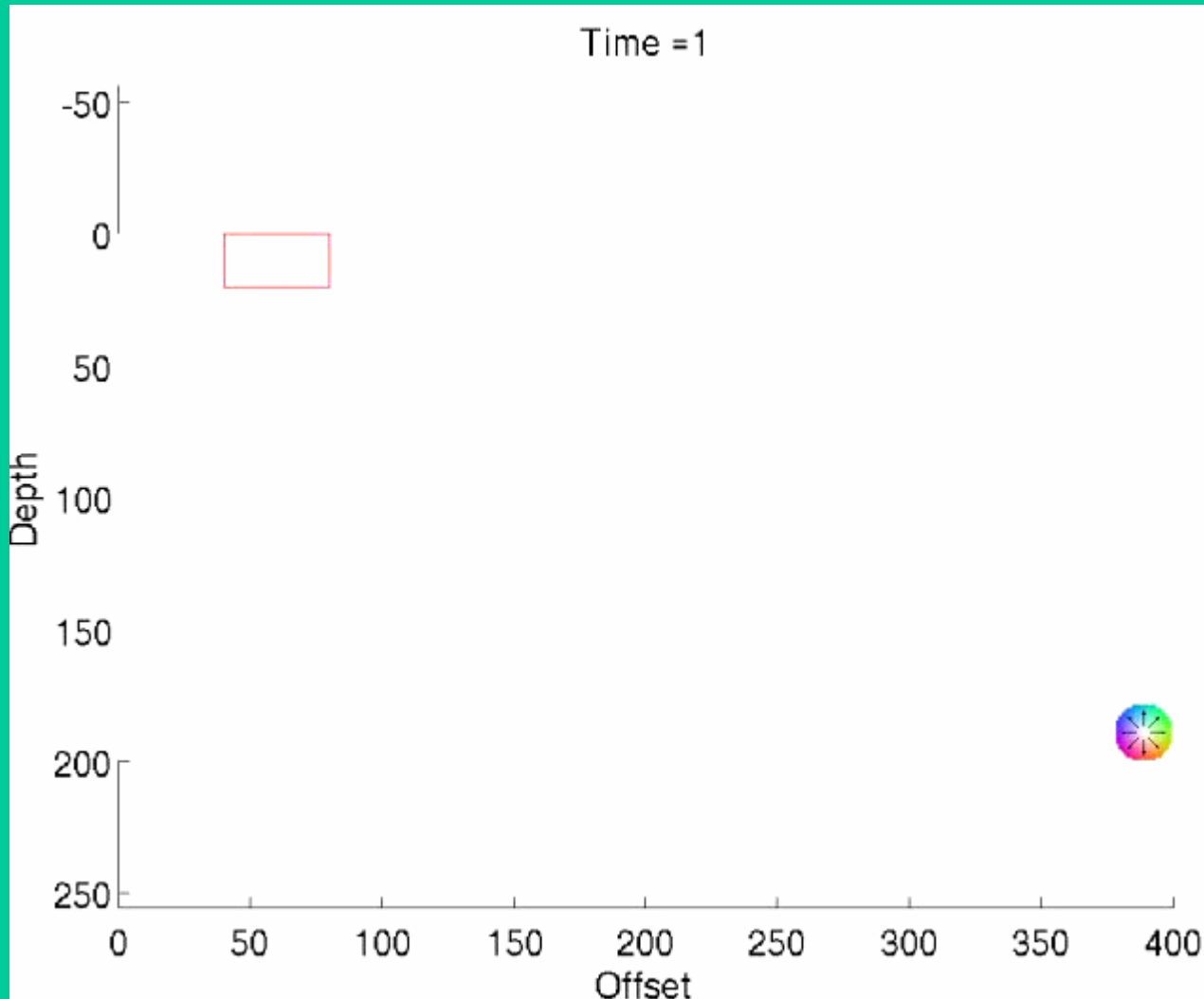
Events near a low shear velocity zone



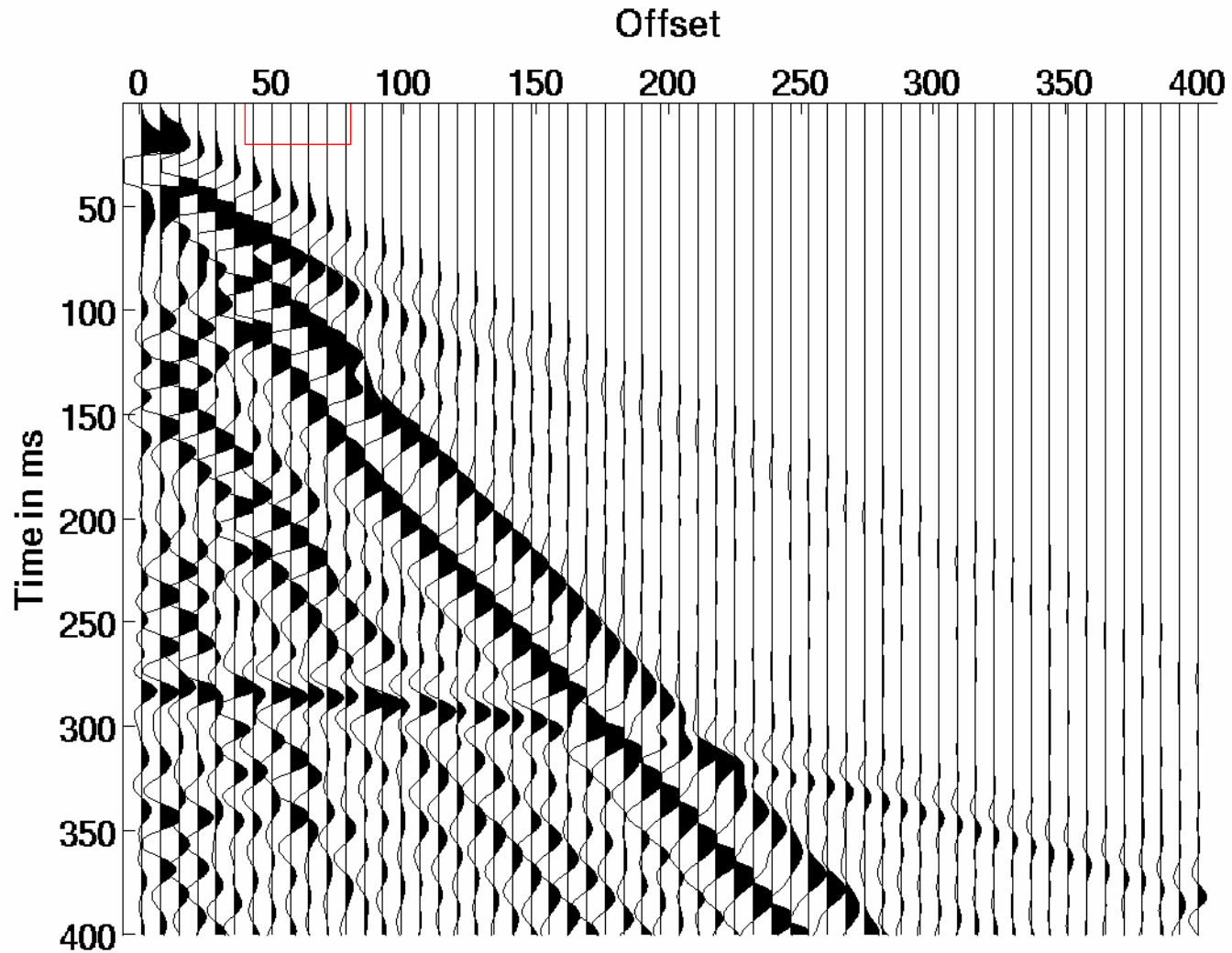
Seismic near a low shear velocity zone



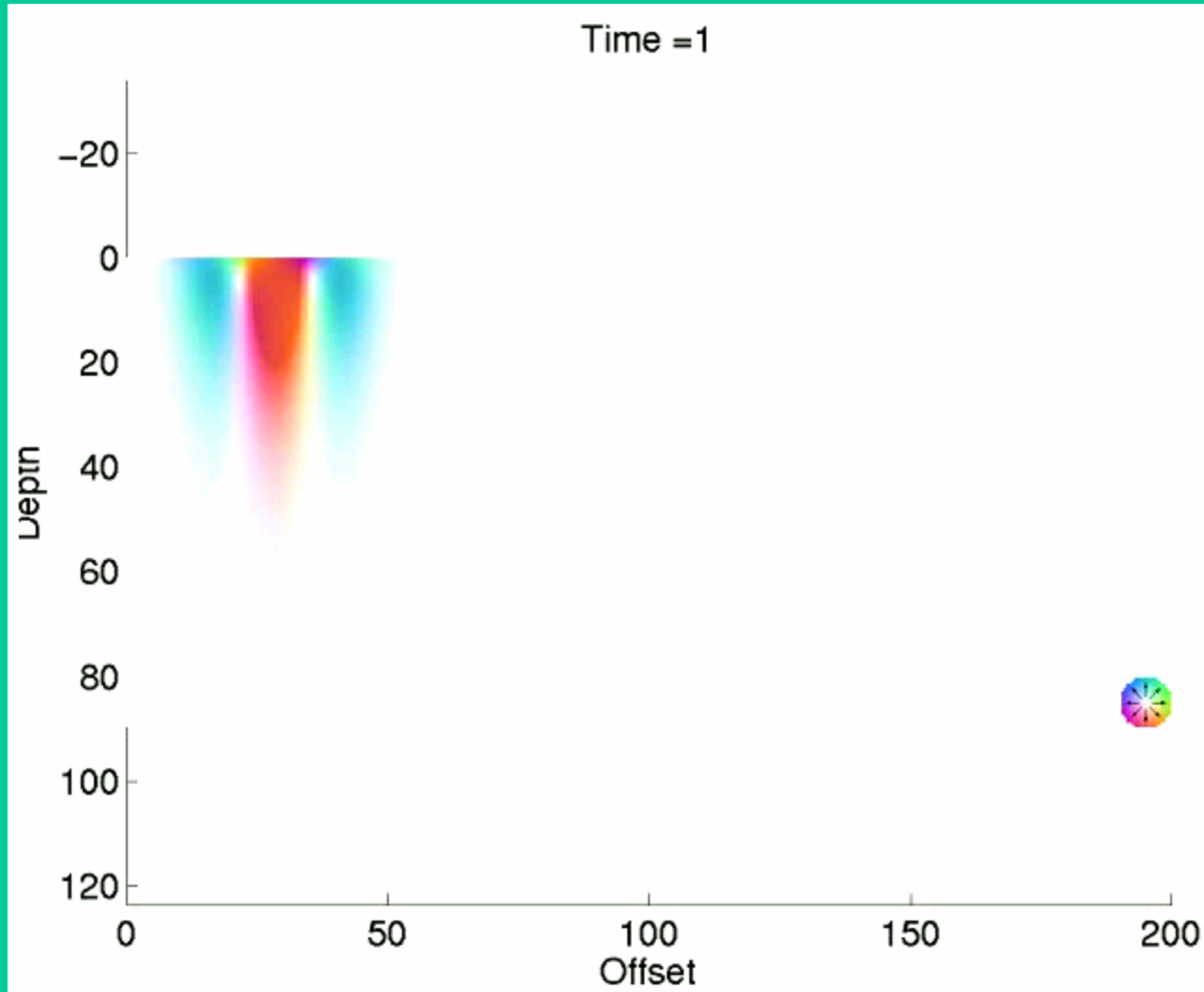
Events nearer a low shear velocity zone



Seismic nearer a low shear velocity zone

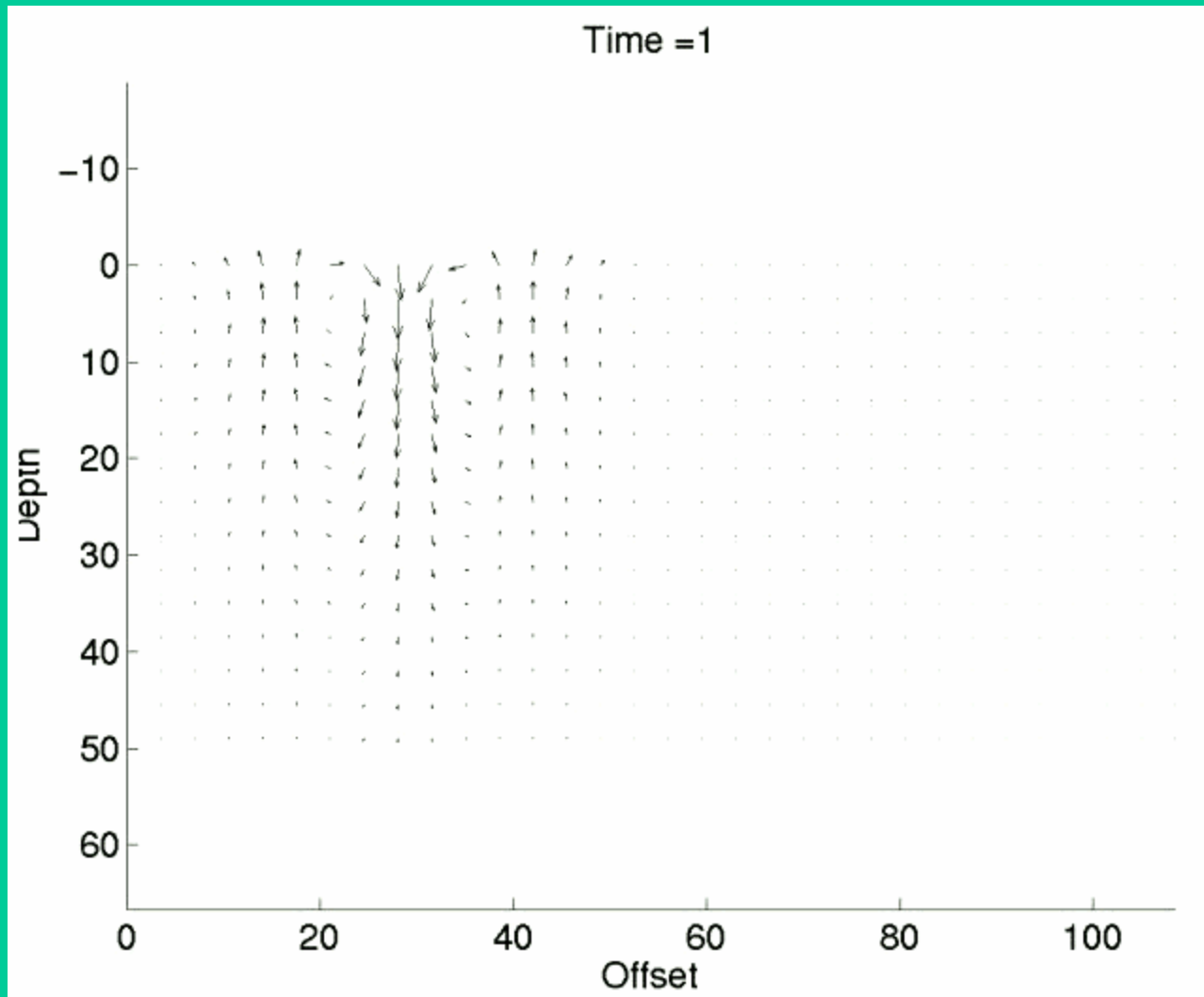


Rayleigh wave



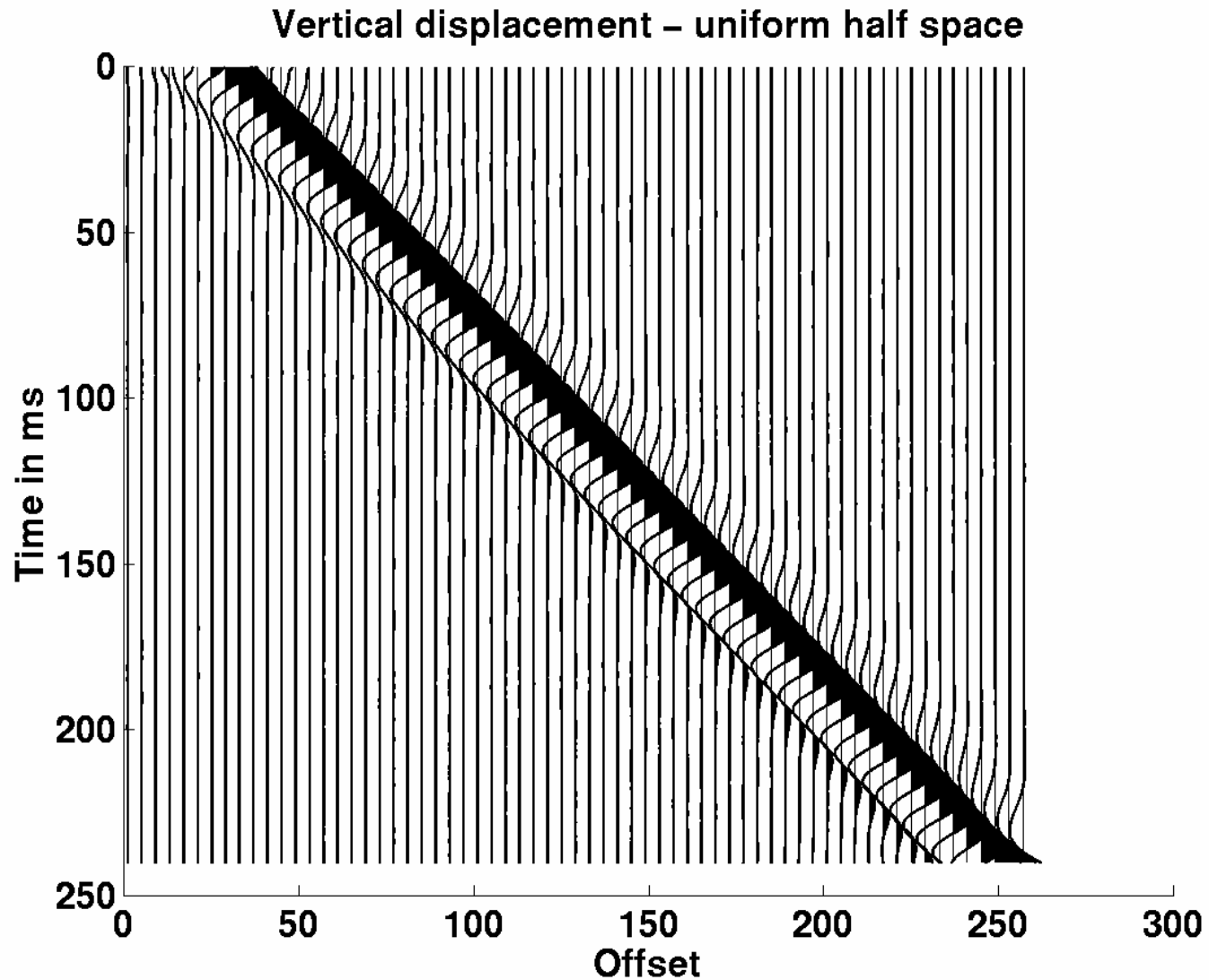
Displacement

Rayleigh wave

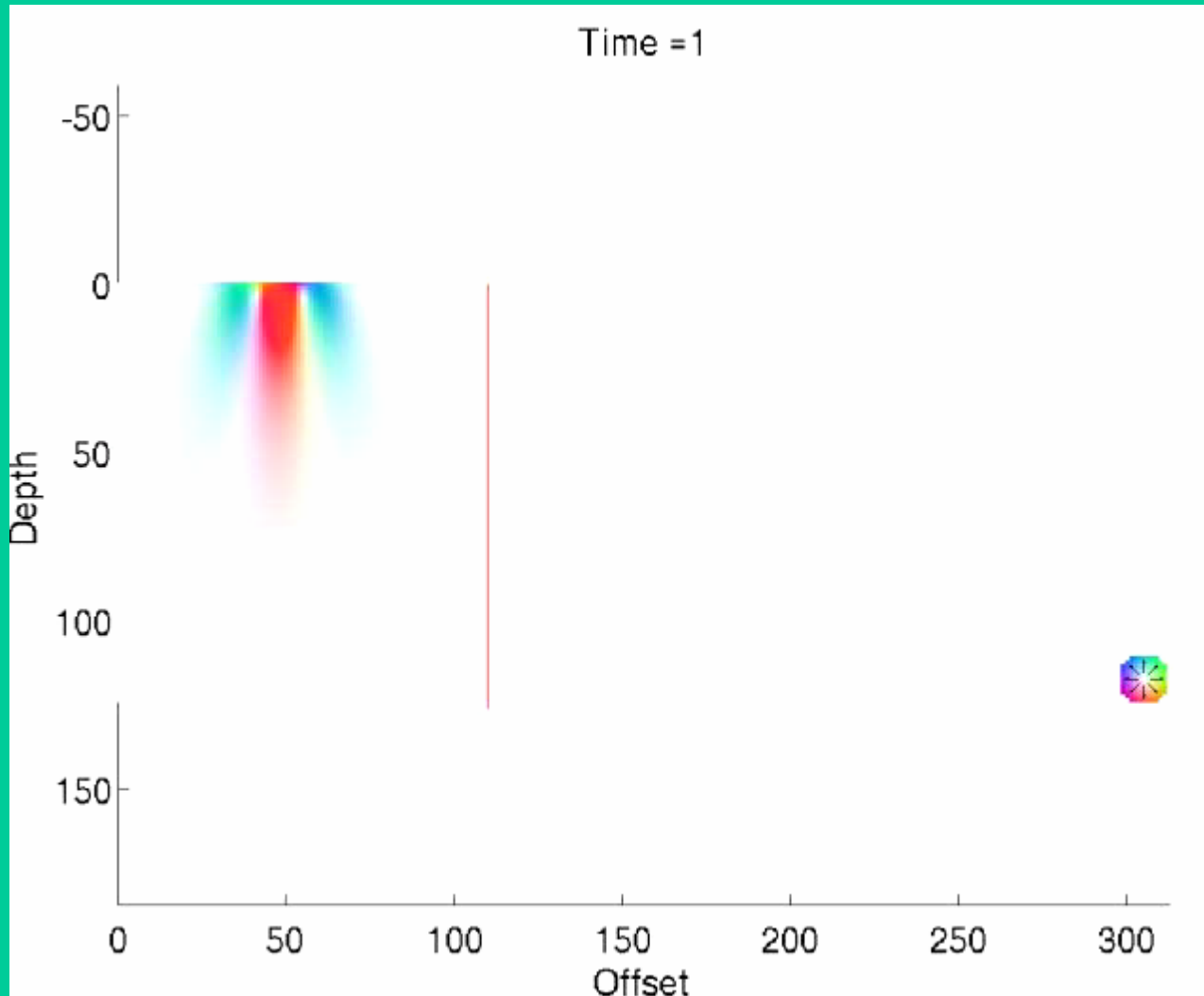


Vector displacement

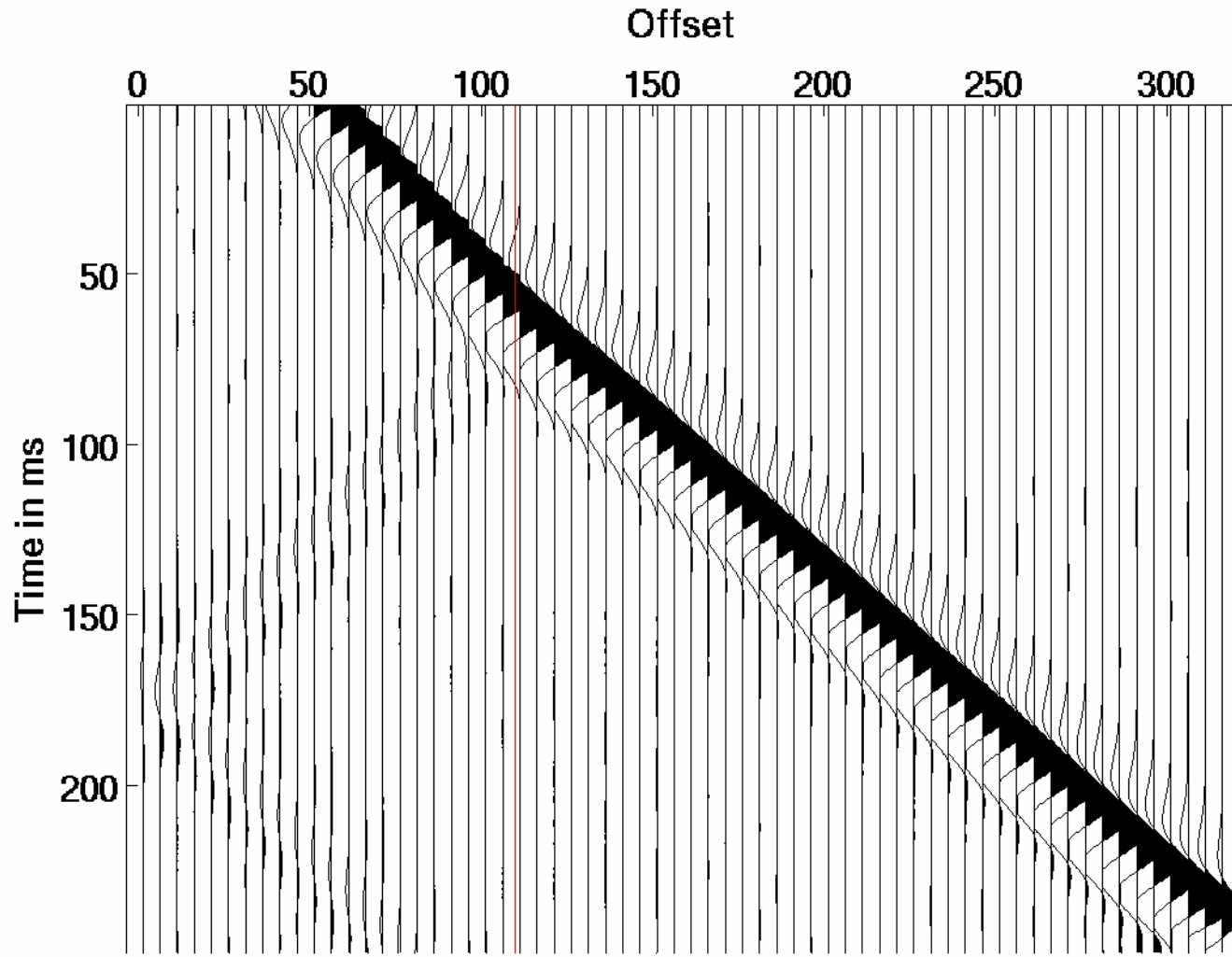
Surface wave on a half space



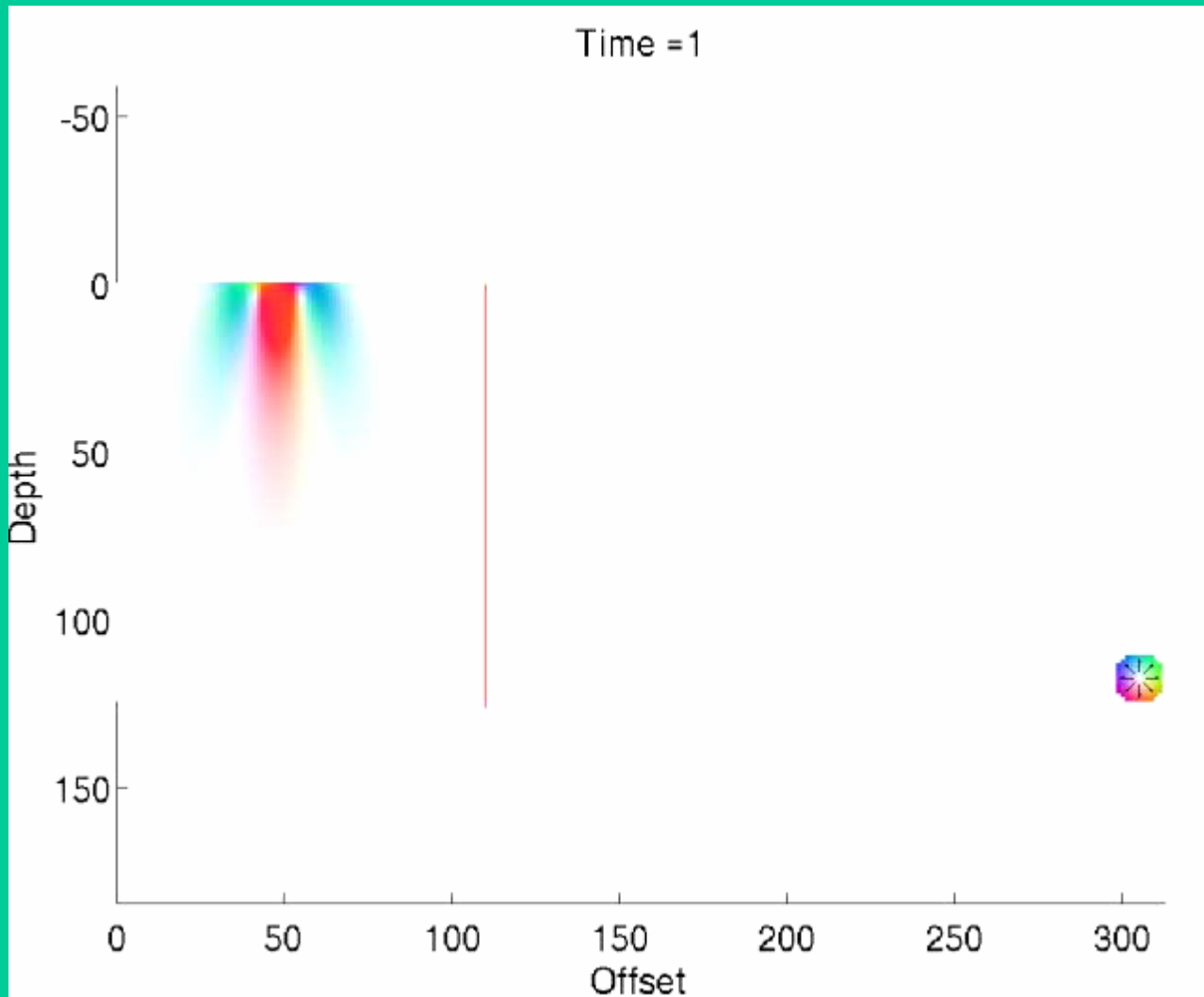
Rayleigh wave into a higher velocity



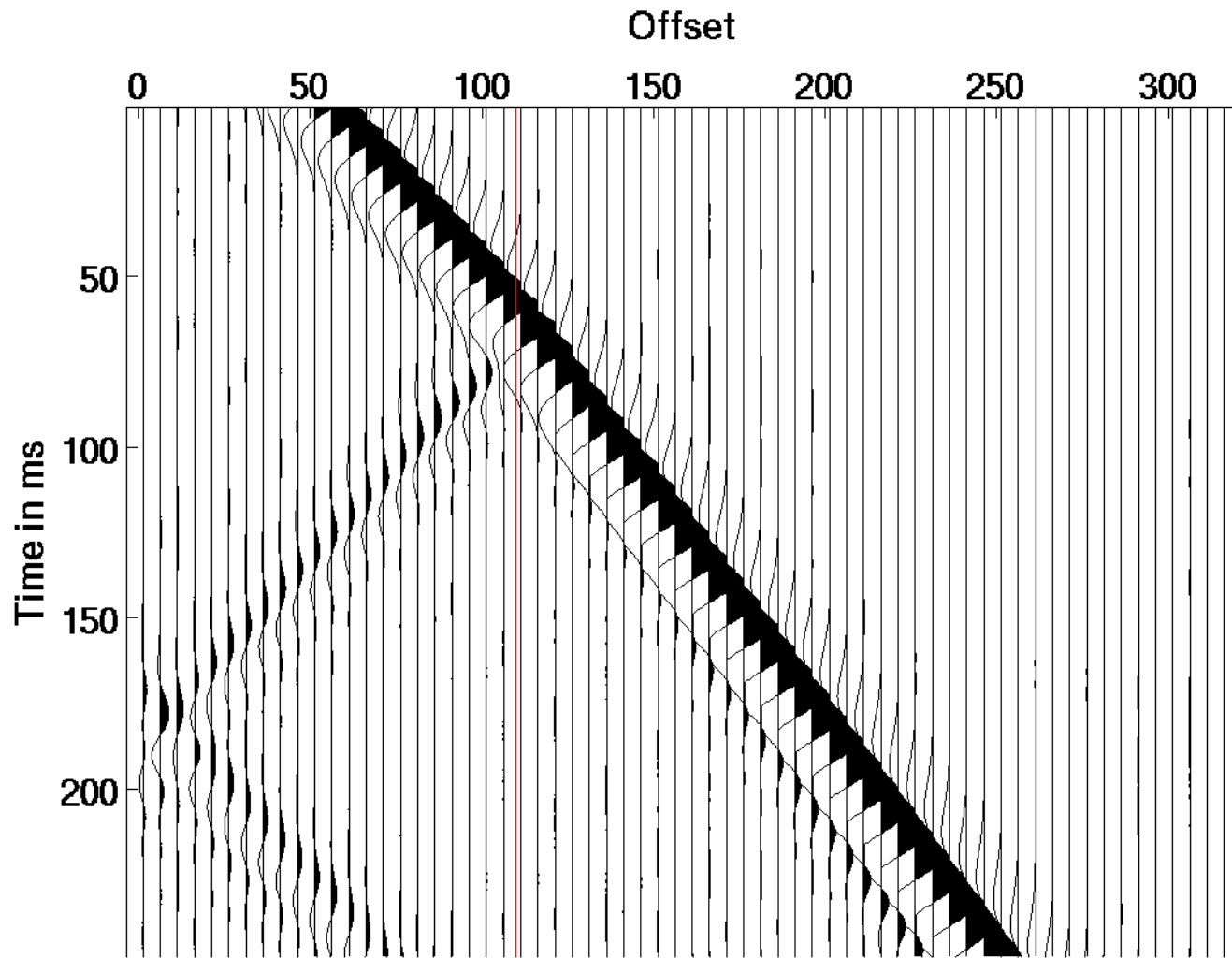
Rayleigh wave into a higher velocity



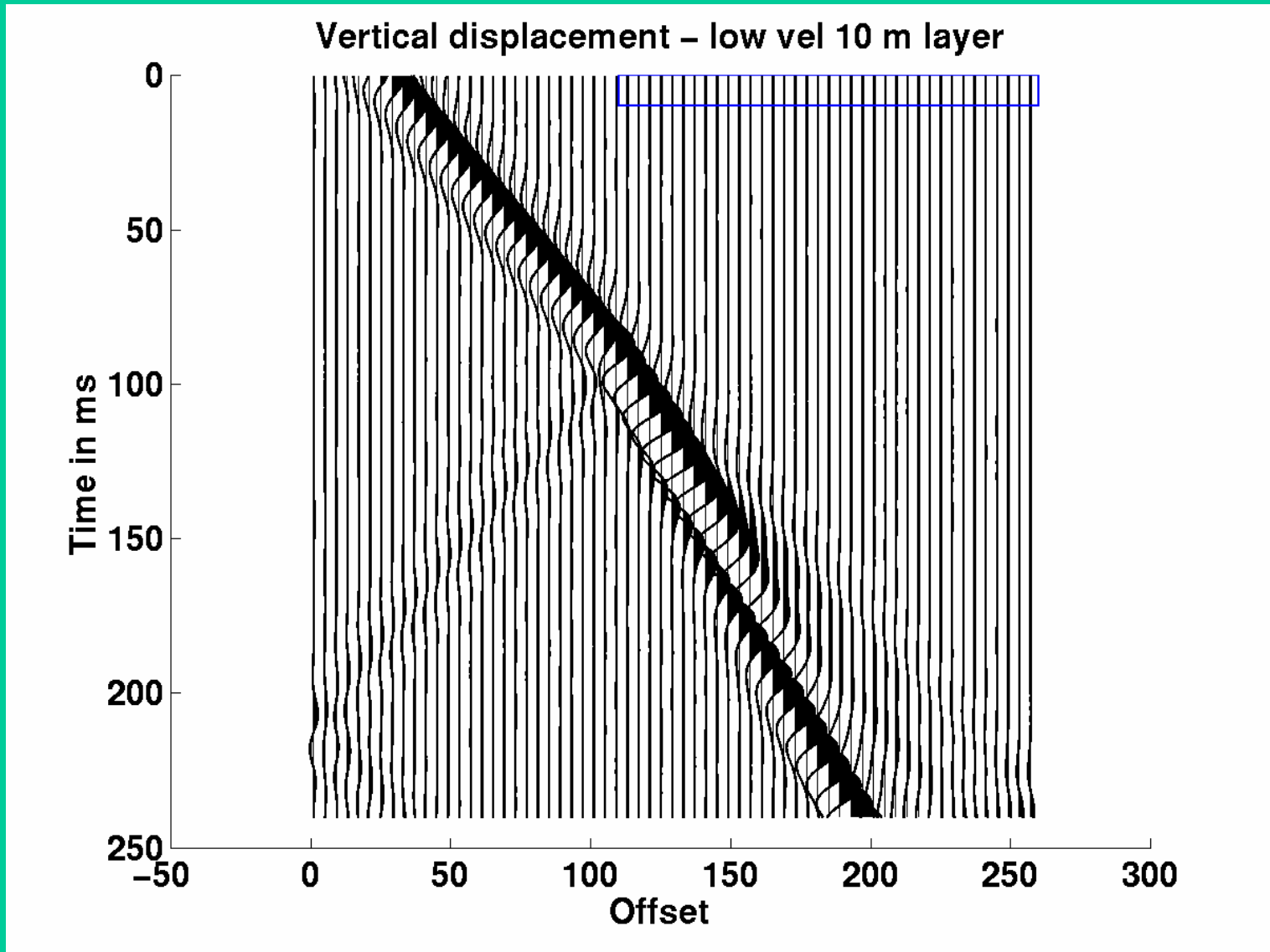
Rayleigh wave into a lower velocity



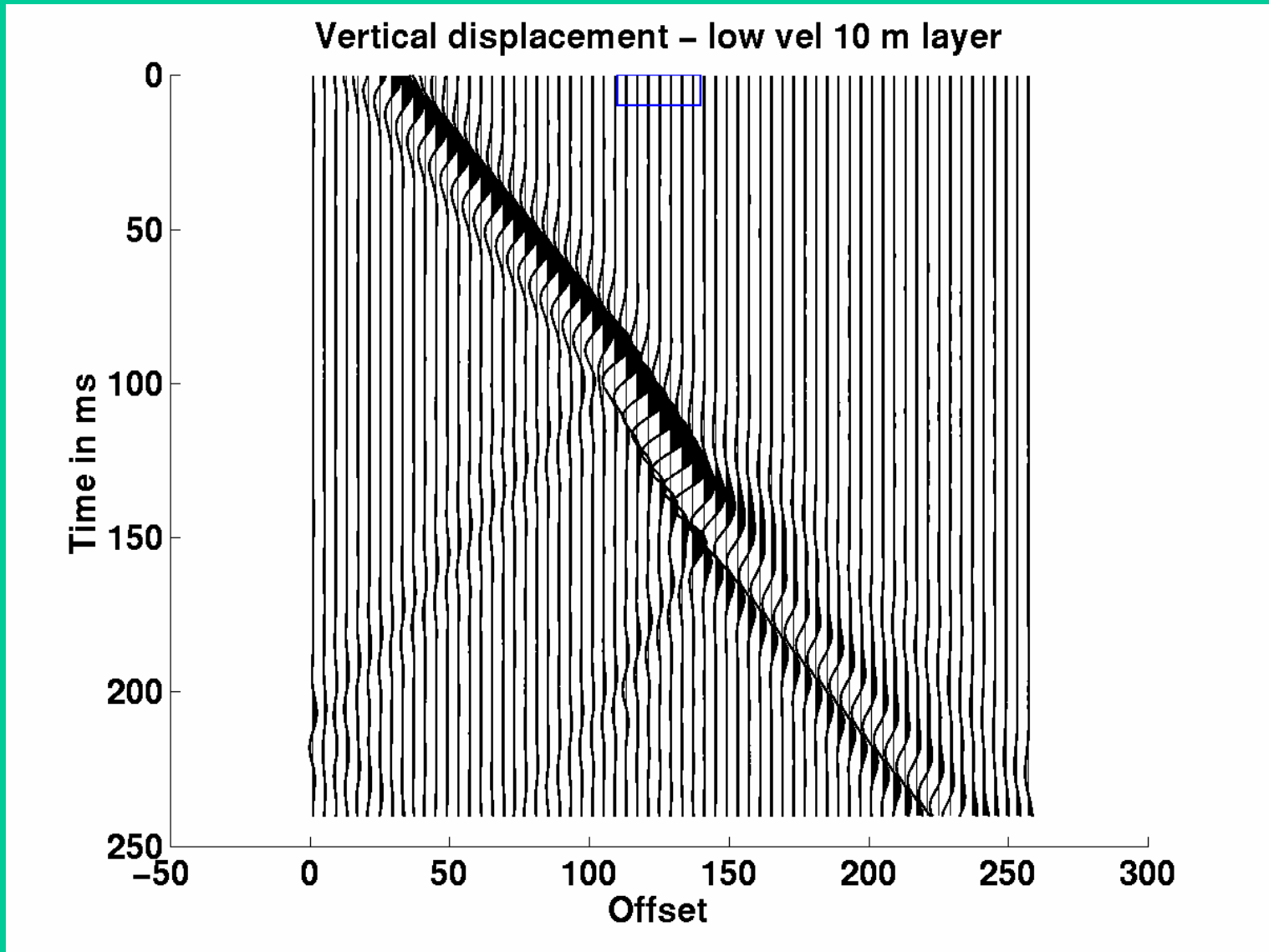
Rayleigh wave into a lower velocity



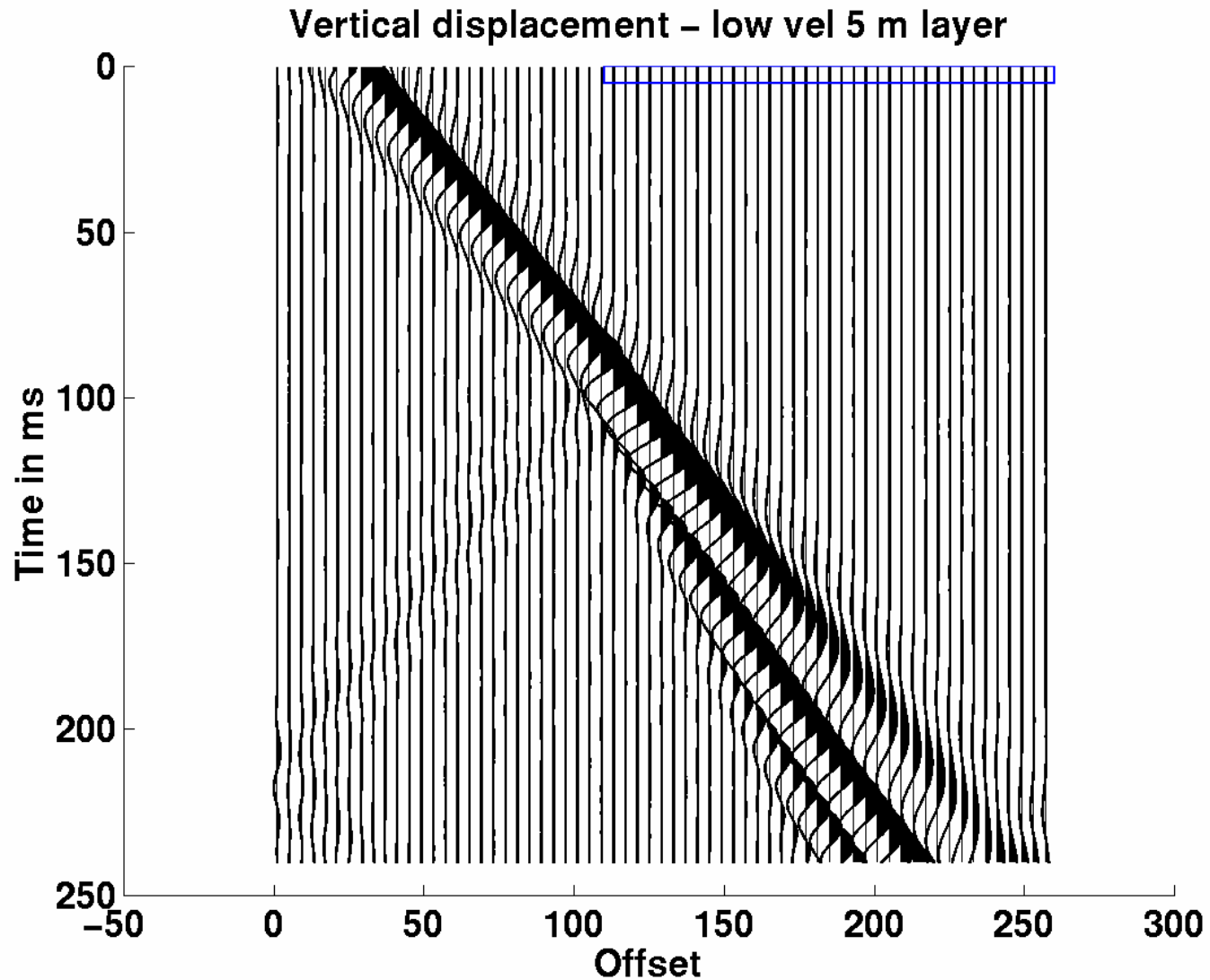
Surface wave into a thin layer, low velocity



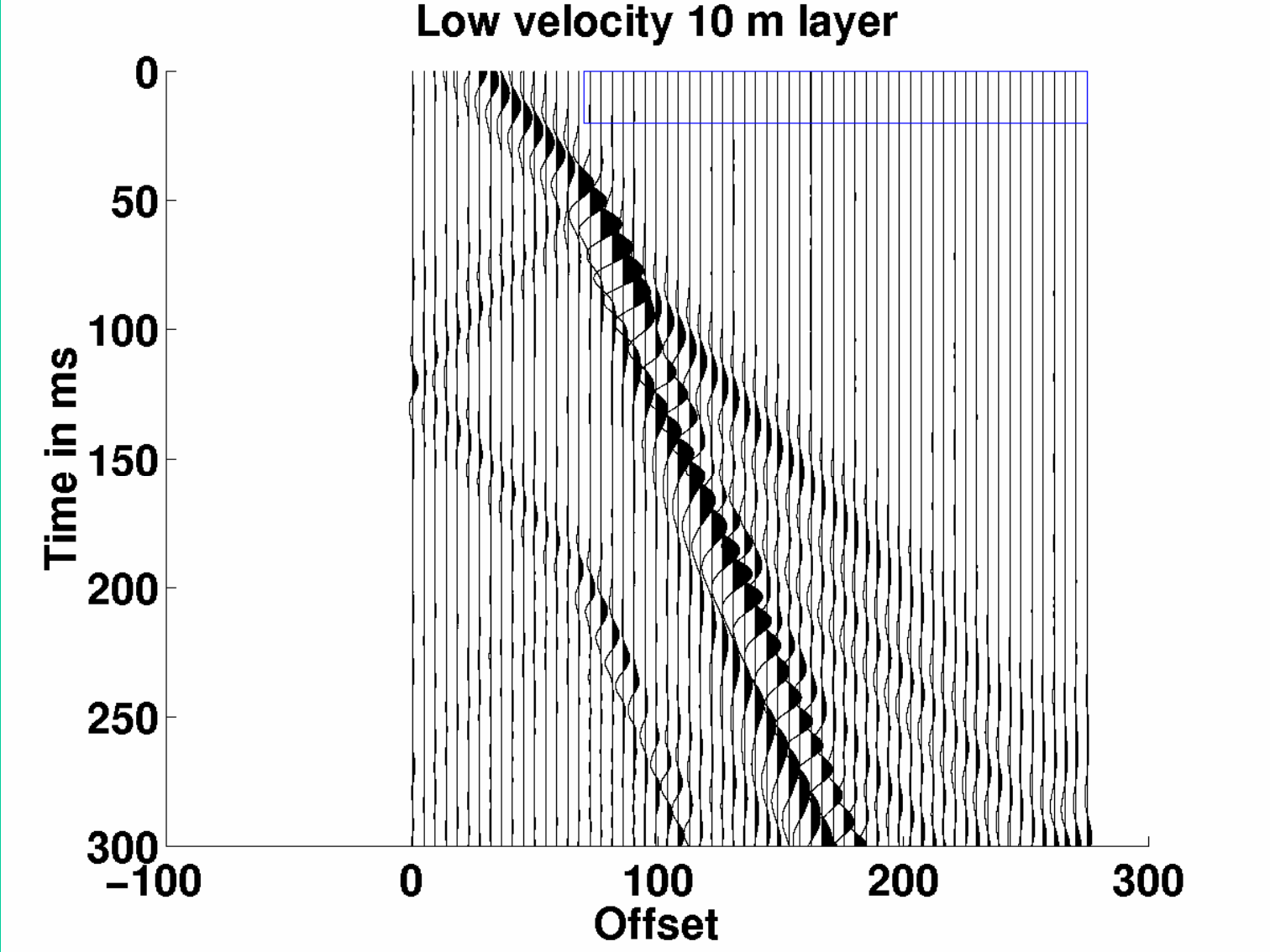
Surface wave into a short layer, low velocity



Surface wave into a thinner layer, low vel.



Surface wave into very low velocity layer



Conclusions

- Shallow shear velocity structure has a major effect on the Rayleigh waves of seismic recordings
- Rayleigh waves generate shear waves at the boundaries of contrasting shear velocity zones
- Despite this, the reflection and transmission of Rayleigh waves have similarities to body waves.
- There is hope to find some means of interpreting shallow shear wave structure from seismic Rayleigh waves.

Acknowledgements

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